



COUNTERMEASURE



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COUNTERMEASURE

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The Official Safety Magazine for Army Ground Risk-Management

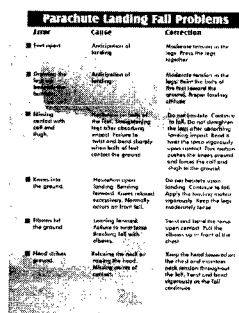
In this issue...

The upcoming holiday is one we celebrate with enthusiasm, usually outdoors or away from home in various recreational activities. It would be particularly tragic for this uniquely American celebration to end in accidental death or injury. To reduce this possibility for yourself and your family, make the risk-management principles you practice at work your way of life off-duty as well. Have a spectacular Fourth!

Jack's Story

Jack, a 16-year-old young man, started his summer off by diving headfirst into unfamiliar waters. Read this story and find out how his whole life changed forever in a blink of an eye.

Page 3



Improper Parachute Landing Fall High on Error List

Jumpers are courting trouble if they don't get into the proper "prepare to land" position and maintain it until the balls of their feet strike the ground.

Page 5

Missing Something?

This soldier jumped off the side of a flatbed truck and was slightly amazed to find his left ring finger didn't come with him.

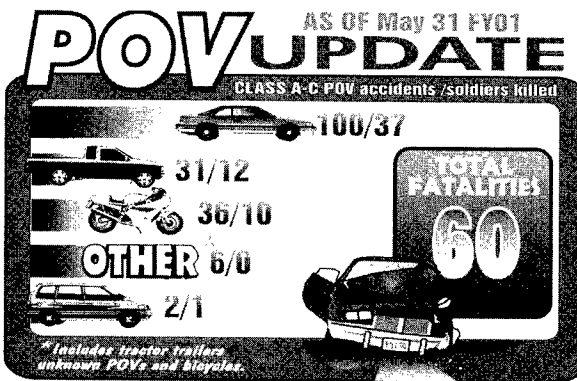
Page 8



Features

Jack's Story.....	3
Improper Parachute Landing Fall	
High on Error List.....	5
Single-Operator Equipment.....	7
Missing Something?	8
Risk Management Integration:	
Key to Army's Success.....	10
Unresolved Issues.....	11
Correction (M939A2 Trucks).....	12
Coming Attractions	12

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Gene M. LaCoste

Gene M. LaCoste
 Brigadier General, U.S. Army
 Commanding Officer

Jack's Story

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It was the last day of school and the beginning of summer vacation, 1961. I was 15 years old. Three friends—Jack (who was 16 and owned the car), Dennis (who was 15), another 15-year old (whose name I can no longer remember)—and I decided to “hit the road” and celebrate.

We headed to the town of Palo Verde at the Colorado River, on the border between California and Arizona. Of course, we didn't inform our parents since to ask permission would have brought an instantaneous “You're too young to go that far!”

After enduring the long, hot drive, we arrived in Palo Verde in the early afternoon. Deciding to do some exploring, we drove the dirt roads looking for a place to access the river. Along one of these back roads where the dust was 6 inches deep and the consistency of talcum powder, a nail punctured one of our tires.

Imagine for a moment what it's like to change a tire in ankle-deep dust at 105 degrees. Needless to say, when we finished, we made a mad dash for the river.

The road we were on eventually ended at the riverbank, and the four of us jumped out and headed for the water. Dennis and I waded into the water with our clothes on, eager to cool off and wash the dust off. Jack, on the other hand, decided not to get his jeans wet and started to take off his pants. That's when he discovered his wallet was missing.

Jack immediately started hounding us to get out of the water and go back with him to where we had changed the tire. Being young and really enjoying the water, we told him to forget it and we'd look for it on the way out.

Jack's impatience and frustration got the better of him, and he drove off to search for his billfold while the three of us stayed in the water. He returned within a half-hour, even

more agitated and overheated, still without the wallet.

After a few choice (but unprintable) words aimed in our direction, he ran to the river and dove into the muddy water. Jack disappeared

for about a minute before floating to the surface, face down, his head covered in mud.

We just laughed and left him there! It's not that we didn't care, because we did. But this was Jack, the class clown, the guy who was always cracking jokes and pulling stunts designed to “get your goat.” At the time, we thought this was just another stunt to get attention.

After maybe another minute, I went over to Jack and lifted his head out of the

water. He gasped for breath and said he couldn't move.

As I held his limp body, I expected him to jump up at any minute and say, “Gotcha!” Still not sure that anything had really happened and not anxious to be made out the fool, I called to the others for help. We half-dragged, half-carried Jack to the car, where we put him in the back seat. This was no easy feat since this was a two-door vehicle and Jack wasn't a lightweight.

I asked Jack what to do, and he said that I should drive him home—200 miles away! Now Jack's car was a '53 Mercury with a Thunderbird engine, and the envy of us all. But, I can tell you, this wasn't a ride I was going to enjoy.

At this point, I still was convinced that once we got off the dirt and reached the main road

After maybe another minute, I went over to Jack and lifted his head out of the water. He gasped for breath and said he couldn't move.

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that Jack would bolt upright and spring his trap. I'd feel like a fool, and we'd all have a good laugh.

When we reached the highway, Jack said, "Hurry!" With the fear in his voice, it finally sunk into my thick skull that something was terribly wrong. I floored the gas pedal and sped towards Los Angeles with the speedometer resting on 95 mph.

Shortly after we hit the pavement, the sun went down. We roared into the darkness getting more scared with each passing mile.

Ten miles short of Indio, California, and almost 90 miles from our starting point, red lights started flashing behind the vehicle. I pulled over.

The California highway patrolman approached the car and asked for my driver's license. I told him that I didn't have one and that our friend was in the back seat and couldn't move. The officer had us exit the vehicle while he talked to Jack. Then he took his keys and scraped them across the bottom of Jack's bare foot.

The cop turned to us and said, "Follow me!" With his lights flashing, the officer led us on an 85-mph race to the hospital in Indio.

While the rest of us waited outside, the emergency room crew took Jack inside.

It must have been after midnight when Dennis' parents (with my mother) arrived at the hospital in Indio. Jack's mom and dad arrived shortly after our folks. The doctors informed us that Jack had broken his neck. He was paralyzed, and they weren't sure he'd be able to walk again.

Just before our parents took us home, we were allowed to go in and visit Jack. I'll never forget the sight that greeted us. There was our muscular friend, helplessly lying on a frame with his ankles tethered and a traction device screwed into his skull in four places.

The ride home wasn't a pleasant experience; although, I must say we didn't get lectured for the entire trip like I'd expected. Perhaps

our parents decided we'd learned a lesson, or perhaps they were as much in shock as we were.

Later, when Jack was referred to specialists in Los Angeles, we learned that he had not actually broken his neck. Even though Jack had made a somewhat shallow dive, his head had hit the mud and bent his neck forward. That caused two vertebrae to separate, and then pinch his spinal cord when they came back together. The damage was irreparable.

I'd like to be able to tell you that this story has a happy ending, but it doesn't. Jack spent a year in hospitals specializing in spinal injuries, but didn't regain the ability to walk or completely use his hands. I took care of Jack the first summer he was allowed to come home. But a year and a half later, I joined the Air Force and saw him only occasionally when home on leave.

Although Jack maintained hope for a while, eventually the reality of what had happened overwhelmed him. Lacking the support groups now available or maybe unwilling to make the best of what he had left, he spiraled downhill. He chose alcohol to deaden his emotional pain. In his mid-30s, Jack died a broken man.

I tell this painful story for the first time in the hopes that some of you may stop and think about my friend. Maybe you'll stop just long enough to prevent this type of misfortune from happening to you or someone close to you.

Diving into unknown waters or making snap, and often foolish, decisions can have disastrous results—even in a place as gentle as a muddy riverbank on the first day of summer vacation.

Editor's note: With the 101 Days of Summer upon us, take the time to stop just long enough to think about the hazards, assess the risks, and plan ahead a little before diving headfirst into trouble.

Courtesy of Gary L. Johnson, Ground Safety Manager with the 319th Air Refueling Wing at Grand Forks AFB, N.D., gary.johnson@grandforks.af.mil

**Jack said, "Hurry!"
With the fear in his
voice, it finally sunk
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and sped towards
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Improper PLF High on Error List

During FY 2000, there were thousands of tactical parachute jumps made across the Army. Of those, there were 199 accidents reported to the Army Safety Center—6 resulted in fatalities. Two fatalities were a result of broken static lines, two were military freefall, one was a Modified Improved Reserve Parachute System (MIRPS) extraction, and the last one was a paratrooper who fell from a 34-foot tower while training exit procedures.

However, the majority of accident causes were from paratroopers failing to perform proper parachute landing falls (PLFs).

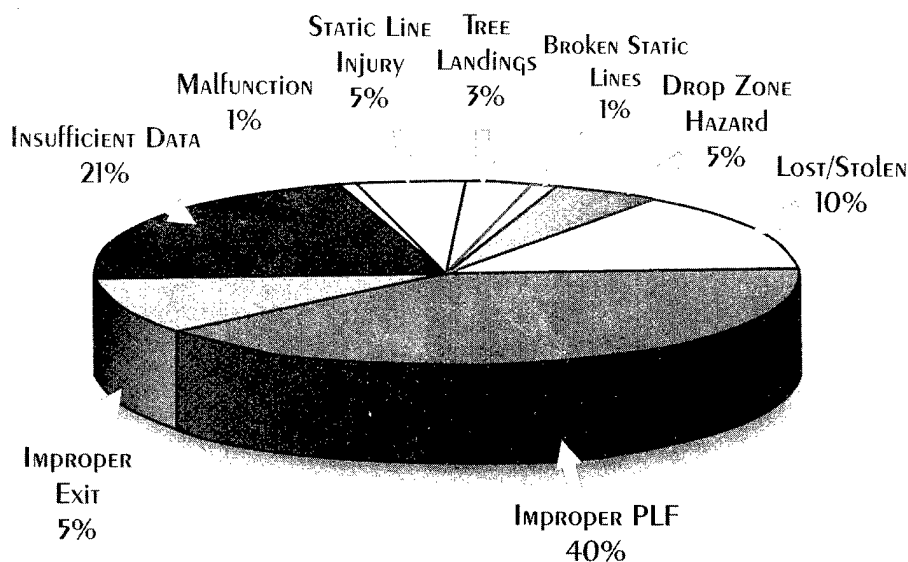
In one particular case, the paratrooper was an Assistant Jumpmaster for a night mass tactical airborne mission. During the paratrooper's decent, he kept looking over his left shoulder to gauge the correct altitude that he was to lower his Alice pack. He became so engrossed in judging his altitude that he failed to assume a good "prepare to land" attitude. Consequently, he landed without lowering

his Alice pack and had his feet apart. The paratrooper's improper PLF caused a spiral fracture to his right ankle.

Jumpers are courting trouble if they don't get into the proper "prepare to land" position for every parachute landing, and maintain it until the balls of their feet strike the ground. Remember, the T-10C series parachute requires the jumper to slip into the wind in the opposite direction of drift. This is done by pulling two risers in the opposite direction of drift. On the other hand, the MC1-1C parachute requires the jumper to pull either the left or right toggle control to face the parachute into the wind. Failing to do this will increase the chances of injury due to excessive drift /ground speed during landing.

With both types of parachute, the jumper should turn the lower portion of the body to a 45-degree angle, exposing that portion that will come into contact with the ground instead of turning the entire body, as some jumpers do.

FY00 Tactical Parachuting Incident Cause Factors



This procedure cannot be done in pre-jump training without a fixed apparatus to prevent the upper body from twisting. During pre-jump, jumpmasters should have soldiers execute PLFs without twisting in the air. Twisting in the air allows soldiers to avoid rear PLFs by rotating the body into a side PLF configuration.

The following chart shows common PLF problems and countermeasures. The

jumpmaster should identify soldiers having difficulties in pre-jump training and require them to practice until they can meet the standard.

Other injury cause factors include improper exits, tree landings, drop zone hazards, lost/stolen air, and static-line injuries. We'll cover those in another issue. **AIRBORNE!**

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Parachute Landing Fall Problems

Error	Cause	Correction
■ Feet apart.	Anticipation of landing.	Moderate tension in the legs. Press the legs together.
■ Drawing the legs up beneath the buttocks.	Anticipation of landing.	Moderate tension in the legs. Point the balls of the feet toward the ground. Proper landing attitude.
■ Missing contact with calf and thigh.	Hesitation on balls of the feet. Straightening legs after absorbing impact. Failure to twist and bend sharply when balls of feet contact the ground.	Do not hesitate. Continue to fall. Do not straighten the legs after absorbing landing impact. Bend & twist the torso vigorously upon contact. This motion pushes the knees around and forces the calf and thigh to the ground.
■ Knees into the ground.	Hesitation upon landing. Bending forward. Knees relaxed excessively. Normally occurs on front fall.	Do not hesitate upon landing. Continue to fall. Apply the twisting motion vigorously. Keep the legs moderately tense.
■ Elbows hit the ground.	Leaning forward. Failure to twist torso. Breaking fall with elbows.	Twist and bend the torso upon contact. Pull the elbows up in front of the chest.
■ Head strikes ground.	Relaxing the neck or raising the head. Missing points of contact.	Keep the head lowered on the chest and maintain neck tension throughout the fall. Twist and bend vigorously as the fall continues.

Single-Operator Equipment

In the past 12 months, the Army has experienced numerous fatal accidents involving equipment that was manned by a single soldier. These pieces of equipment are designed to be operated by one soldier and are typically used for specific purposes. Although these accidents involved vastly different types of equipment, they all share several common themes: unique vehicle design, specialized operator training requirements, and uncommon utilization.

Vehicle design

Due to the design of the equipment, the operators were alone at the time of the accidents. Unlike most vehicles in the Army inventory, these vehicles do not facilitate the supervision of the operator during use. In many of these accidents, the first-line supervisor wasn't in a position to make an on-the-spot correction of mistakes made by the operator. Due to these design characteristics, the operator of the vehicle inherits many of the duties that the vehicle commander performs in other vehicles. Along with completing the task at hand, the operator has to monitor vehicle clearance and ensure the safe operation of the vehicle at all times.

A young soldier was operating his M9 Armored Combat Earthmover (ACE) as part of his unit's night, non-tactical road march. His vehicle was the last in the six-vehicle convoy. At some point during this road march, the operator maneuvered too close to the edge of the road and the vehicle flipped into a ravine. Because he was in the last vehicle in the convoy, no one witnessed the accident; therefore, no one was around to assist this operator during or after the accident. You see, the M9 ACE is one of those Army vehicles that is manned by only one soldier.

Operator training requirements

Along with design differences with "traditional" Army equipment, these items usually require specialized training for operation. This training is in addition to standard training programs associated with more common wheeled or tracked vehicles.



M878 "Yard Dog"

For example, one recent accident involved the use of a commercially purchased 16-foot aluminum, flat-bottomed boat. Witnesses state that the operator was alone in the boat when he entered the main channel of a wide river. He was last seen in the water, attempting to swim to the shore when he went under the water for a final time. His body was recovered later that day. The accident investigation revealed that this soldier had not received any formal training for the operation of this piece of equipment. In fact, the investigation revealed that this soldier (and others in the unit) were to transport a group of students in these boats later that day. None of these operators had undergone any formal training for this operation or this piece of equipment.

Uncommon Utilization

Another similarity among these pieces of equipment is the uncommon ways they are utilized. This equipment is designed to perform a particular function that typically is not performed by other vehicles in the Army inventory. The M878, which is commonly referred to as the "Yard Dog" is a classic example of this.

A soldier was killed recently when a Yard Dog ran into him during a night operation near a warehouse. The M878's sole mission is to shuttle trailers around in confined parking

areas. As in this case, the Yard Dog was beginning one such mission when the soldier was fatally injured. The operator of the Yard Dog did not see the soldier because he was looking at a different part of his vehicle at the time of impact.

Lessons learned

The lesson commanders should learn from these accidents is that these vehicles require special attention that focuses on their unique design and function. Commanders must ensure proper training (as outlined in AR 600-55) is provided for all the types of equipment in the unit. Commanders should also understand these vehicles call for operators who do not require as much supervision and who are capable of performing a myriad of tasks

normally assigned the assistant driver/vehicle commander. Finally, commanders must ensure the risk management principles are fully applied to the use of these one-operator vehicles/equipment.

In closing, in the Army, we are trained that we function best as an integrated crew or team; this is almost always true. However, certain missions and requirements put young soldiers in a position where they must operate alone. Leaders must ensure these soldiers are set up for success. The risks associated with this equipment and these missions must be managed by the chain of command to ensure operators are protected from danger and the mission is completed safely.

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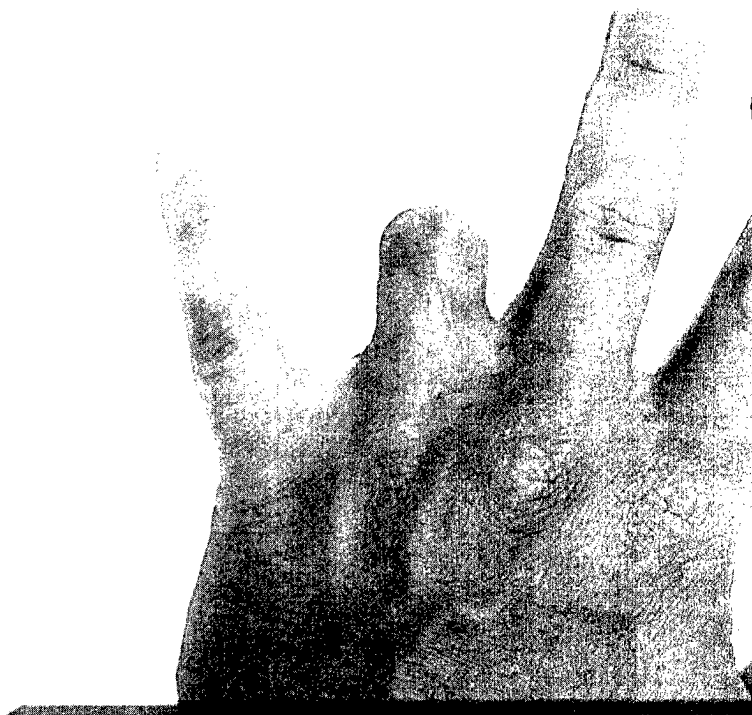
Missing Something?

Over 10 years ago, after finishing the unloading of some office chairs from a 5-ton truck, I elected to jump off the back. That jump altered my life. You see, the 5-ton truck had a hydraulic lift attached on the back-end, and some stamped steel rails ran along the side of the flatbed. My comrade and I were using the hydraulic lift to lower chairs to the ground. I had just finished unloading the chairs and my comrade was rolling them inside the building. I was left with a decision to either jump the 4½ feet to the tarmac or wait for my buddy.

I figured I was wasting time waiting around, so I put my hand on the truck's side rail and jumped, feeling a slight tug. Thinking I had cut my hand on something, I was slightly amazed to find my left ring finger missing. Not only gone, but ripped from my body. The skin was missing from the area around the top of my hand, showing the muscle, while blood was flowing from the opening. A small piece of bone (the middle part of my finger) was jutting from the mess, and broken off about halfway down.

Well, there's nothing like the irrational fear of bleeding to death! Quickly grabbing my hand, and not even looking around for my missing finger, I ran inside the hanger to summon help. The rest of this story wouldn't even be worth telling, but for one aspect. I was

a medic in a MEDEVAC company. My fellow medics were all well trained and state licensed emergency medical technicians, and expertly handled my care and my detached appendage. After dressing the wound and immediately putting my mangled finger on ice, I was flown to a local Army medical center that had a digit reimplantation capability.



During the next month in the hospital plus 30 days of convalescent leave, the center doctors all tried their best to reattach my finger, but with the blood and nerve endings so torn and distorted, all efforts failed. Even with the best medical response possible, the hope of keeping my finger was fruitless.

Am I alone? No way. In 1995, according to Department of Labor statistics, 11,308 people had the misfortune of experiencing this type of injury. A full 90 percent of these people were male, and ranged in jobs from machine operators to laborers to truck drivers.

While my accident was caused by a very small piece of protruding metal catching on my wedding ring and tugging the finger off as I jumped to the ground, most amputations don't happen this way. Over ¾ of the cases involve a worker getting their finger(s) caught between or crushed in a piece of machinery. Don't conjure up in your head a huge machine press at the local manufacturing plant back home. This machinery can be a pulley and belt on a HMMWV electrical system, a hatch on an M1A1, or the rotating drive shaft of a rotor or auxiliary drive system on any modern helicopter. I don't have an Army TM or

any earth-shattering advice to quote here, but before you do any manual task, please keep the following simple points in mind:

■ **Don't wear jewelry.** On the job and off, remove all jewelry that could catch on equipment or pose an electrical hazard. As the popular, but somewhat gross, Army poster states "Take off the ring, not the finger." I've been wearing my recovered wedding ring on my dog tags for the last several years. Which reminds me, don't wear dog tags if you're working around live electrical components. If your spouse wants to know where your wedding ring is, show her the poster in the March 2000 issue of *Countermeasure*.

■ **Don't put any part of your body between hard objects.** Most soldiers have put themselves in some compromising positions while backing up vehicles to docks, trailers, or fences. Think! Use proper ground guide procedures. Use a two-person lift when required, and never stick your hands where you can't see them.

■ **Use LOCKOUT/TAGOUT.** If that term makes no sense to you, go find your unit safety officer or NCO and ask him to explain it to you. Since 1989, OSHA has mandated that all equipment being serviced must be physically "locked out" of operation, energy removed from the item, and properly tagged. With extremely few exceptions (and only under a written policy), you cannot work on a piece of equipment while it has the possibility of being inadvertently turned on.

My accident doesn't need to be yours. After a painful skin graft that hurt more than the amputation, a waiver and several weeks on "hold" status, I was granted the privilege of going to flight school. Now, as an instructor pilot, I am grateful to show-and-tell my lessons learned to my student pilots.

Additionally, I have met other soldiers (retired and active duty) that have had similar accidents. Make sure you develop a work ethic that integrates safety into the many tasks you perform. It just may save a soldier's finger.

Courtesy of CW3 Mike Cronrath. Mr. Cronrath wrote this article while attending the CP-12 Safety and Occupational Health Course here at Fort Rucker. He is now stationed at Fort Campbell, KY, 334-718-5902, cronrath@earthlink.net

So far this fiscal year, the Army Safety Center has received reports of 11 losses of fingers while on duty.



DANGER

KEEP HANDS CLEAR

Risk Management Integration: Key to Army's Success

The Army achieved steady gains in safety from the late 1980s through the mid-1990s by implementing the 5-step risk-management process as its principal risk-reduction tool. From 1996 through mid-year 2001, there have been several short-term up and down trends, but basically accident rates in most categories have leveled out. To achieve and sustain additional gains in safety, we must close the gap that still exists in the full integration of risk management into Army culture.

Analysis of both aviation and ground data shows that accidents are occurring because of indiscipline. This is demonstrated in three major areas: (1) a lack of leader involvement, (2) failure to maintain rigorous training standards, and (3) failure to maintain and enforce discipline. All three areas are well within our ability as an Army and as individuals to affect.

Army wide initiatives to further embed risk management into all missions:

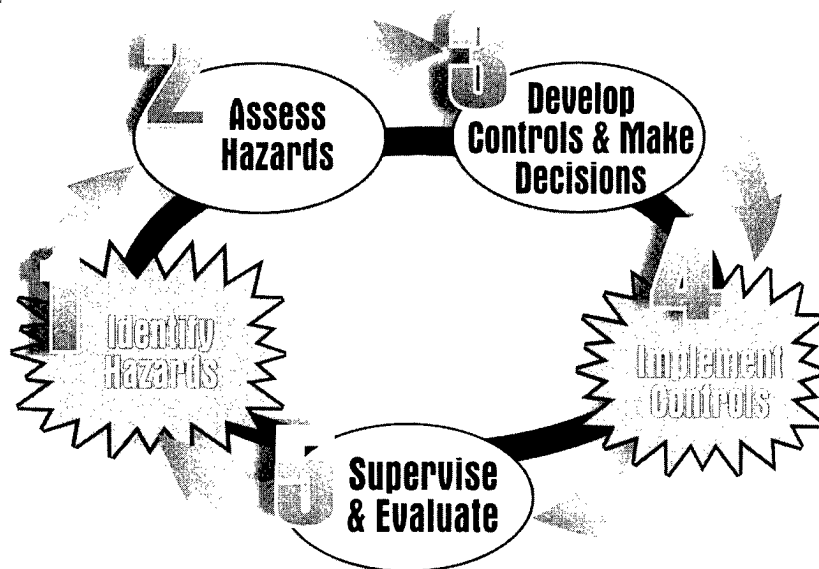
- Identify opportunities to integrate risk management into the Army through Army Transformation and align the Army Safety Strategic Plan with the Transformation Campaign Plan.

- Continue aggressive efforts to institutionalize risk management into all aspects of doctrine, training, leader development, materiel development,

organizations, and soldier systems.

- Partner with industry organizations recognized for their world-class safety programs.

- Ensure that soldiers from initial entry through division commanders receive initial and continued risk management training.
- Initiate a Department of the Army Inspector General (DAIG) review of risk management integration in units across the Army.



Safety Center initiatives to help leaders become more proficient in making risk decisions:

- Enhance the Safety Center's Web-based Risk Management Information System to offer a medium for sharing lessons learned and provide commanders with near real-time access to hazards, risks, and controls information.

- Increase the number of Safety Center NCO professional development mobile training teams to teach risk management to NCOs and junior officers. To date, some 1,900 Active, Reserve, and National Guard soldiers have received risk-management training through this program.

- Field Safety Center assistance visit teams to help commanders assess their safety programs and help them see where they need to focus resources to best control unit hazards.

- Enhance cradle-to-grave system safety

initiatives in our weapon systems.

- Support the DAIG in reviewing risk management integration in units across the Army.

- Assist the Army Aviation Center in integrating risk management into simulation-based aviation training exercises, Army Training and Evaluation Program mission training plans, and the captain's career course.

Individual initiatives that each of us can undertake to ensure that risks are managed effectively in our units and organizations:

- Emphasize to soldiers the importance of executing each mission to the risk management standard—an informed decision at the appropriate level.

- Provide constant reminders to soldiers that a risk assessment is not an end state; it is only the first two steps of risk management. Controls must be developed and put in place, and hazards must be identified and assessed—and reassessed as missions and conditions change.

- Make sure that you and your key personnel are at the right places at the right times to make risk decisions.

- Mentor junior leaders, teaching them what right looks like, and helping them gain the experience and wisdom to effectively manage risks.

- Demand that training be executed to standards—no compromises, no shortcuts accepted.

- Enforce discipline and setting the example.

- Ensure personnel in your unit are trained in risk management and practice sound risk management techniques.

All of the risk management integration initiatives mentioned above, as well as others that are ongoing but not listed here, are crucial to improving safety performance. But ultimately, safety is a commander's program and leadership involvement is paramount. Pushing accident rates down and, more importantly, sustaining a long-term downward trend requires aggressive actions to firmly embed risk management into all Army operations as well as developing a risk-based investment strategy.

Changing the culture of an organization may be an evolutionary process, but we can completely integrate risk management into ours if we persistently execute one mission at a time—every mission, every level—to the risk management standard. Success in making risk management a part of the Army's culture will enhance combat readiness by ensuring that soldiers are not injured or killed in preventable accidents.

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Unresolved Issues

Many questions are typically left unanswered after an accident occurs in which materiel factors are suspected. One of the ways questions can be answered is by completing an SF 368, Product Quality Deficiency Report (PQDR).

When equipment or components are thought to have failed or malfunctioned and caused/contributed to an accident, be sure to enter the correct code number in Block 22 of the PQDR (Reference DA Pam 738-750 for codes). This ensures appropriate equipment disposition instructions are provided for teardown analysis to determine the source of failure.

Let's do our part to see that the materiel failure causes are identified and corrective actions are initiated to prevent future accidents.

POC: Peggy Adams, Technical Quality Control, DSN 558-2256 (334-255-2256), adamsp@safetycenter.army.mil

Correction

Thanks to all the sharp-eyed readers who noticed that we published the incorrect maximum allowable speed for the M939A2 trucks in last month's *Countermeasure*. In the article "The Rest of the Story" on page 12, the correct sentence should read, "...the board checked the Army Electronic Product Support Bulletin Board via the Internet website <http://aepps.ria.army.mil/> and discovered that there are two safety messages (GPM 96-04, 131807Z and SOUM 98-07, 081917Z) restricting the maximum allowable speed for M939A2 trucks to 40 mph (not 45 mph as previously stated) until antilock brakes and radial tires are retrofitted."

We're sorry for this error.

Coming Next Month in Countermeasure

Next month's issue of *Countermeasure* is a quantum leap forward in our history. Since October 1979, we've been the official ground safety publication for the Army, bringing you stories and facts to help keep soldiers out of harm's way.

Every month, we land in mailboxes and day rooms at Army installations around the globe. Over 29,000 copies are distributed and read by soldiers in the field (we've even heard tales that we are standard reading material in latrines). We hear from readers who access our publication on the safety center website at <http://safety.army.mil>, as well as those who read the traditional paper version.

We hope that you've found *Countermeasure* to be a helpful and readable tool for the past 21-plus years. Now we come to the end of our black and white era. In August 2001, we'll be coming to you in vivid full-color. We hope this

makes *Countermeasure* livelier, more readable, and more interesting for you. But the bottom line, as always, is to send you the lessons learned about the principles of risk management, and to keep soldiers alive.

